

REMARKS

Claims 1, 4-12, 14-22, and 24-31 stand rejected in the subject application.

Claims 2, 3, 13, and 23 have been previously canceled. Claims 1, 4-12, 14-22, and 24-31 are pending.

A) Rejection of Claims 1, 5, 7-12, 17-22, 25, 27, 28, 30, and 31 under 35 U.S.C. § 103(a)

Claims 1, 5, 7-12, 17-22, 25, 27, 28, 30, and 31 stand rejected under 35 U.S.C. § 103(a) as being obvious over GB 2 284 059 A Chowienczyk (hereinafter, "Chowienczyk") in view of JP 2001-258165 Nukui (hereinafter, "Nukui"). Applicants respectfully traverse this rejection, as set forth herein, and assert that the PTO has failed to establish a *prima facie* case of obviousness.

The Examiner asserts that it would have been obvious to add the capacity calculation means of Nukui to the gas sensor device of Chowienczyk in order to obtain the claimed invention. Applicants respectfully disagree.

As stated by the Examiner, Chowienczyk fails to teach a gas sensor controller that is configured to subtract a cumulative current output of the sensor from a theoretical total to determine the remaining life of the sensor, as recited in independent claims 1, 12, 20, and 28, and the claims that depend therefrom. Instead, Chowienczyk determines "expected useful life" based on the gas sensor's date of manufacture, the date of last calibration and the calibration factor. In support of this assertion, it is noted that Chowienczyk, on pages 4-5, states:

...the gas sensor apparatus is one in which the maintenance information in the memory means is of first and second types with the first type of maintenance information being that which is written into the memory means at the time of manufacture of the gas sensor apparatus and which is never changed, and with the second type of maintenance information being that which is updated everytime a calibration is performed.

Nukui teaches a battery residual capacity detector including a controller/capacity calculation means that subtracts a cumulative current total (total current consumption) from a theoretical total (predetermined capacity) in order to alert a user when the electrical circuit is nearing the end of the its theoretical life (paragraph 17).

It has been held that "if a proposal for modifying the prior art in an effort to attain the claimed invention causes the art to become inoperable or destroys its intended function, then the requisite motivation to make the modification would not have existed." See *In re Fritch*, 972 F.2d at 1265, 23 USPQ.2d at 1783. Furthermore, MPEP §2143.01 (VI) states "if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." See *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

It is submitted that it would be improper to combine the Chowienczyk and Nukui references because the combination or modification would destroy the intended function and/or change the principle of operation of the gas sensor of Chowienczyk. For example, as set forth herein, Chowienczyk calculates "remaining life" based on the gas sensor's date of manufacture, the date of last calibration, and the calibration factor. Any current measured by Chowienczyk serves no purpose in determining useful remaining

life of the gas sensor. Chowienczyk's principle of operation of determining "remaining life" would be changed or destroyed if the Chowienczyk and Nukui references were combined because Nukui calculates "remaining life" by a method completely different from Chowienczyk. Indeed, combining the "remaining life" technology of Nukui with the gas sensor of Chowienczyk would require wholesale modifications of function and operation in a manner that is neither contemplated nor intended by Chowienczyk.

In addition, as stated in the MPEP §2143.02, "a reasonable expectation of success is required to support a *prima facie* case of obviousness." *In re Clinton*, 527 F.2d 1226, 1228, 188 USPQ 365, 367 (CCPA 1976). Applicants contend that one of ordinary skill in the art would not have a reasonable expectation of success of creating the claimed invention by combining the Chowienczyk gas sensor and the Nukui battery because both inventions have contrasting and opposing methods of calculating "remaining life." Chowienczyk already teaches a method of calculating gas sensor remaining life. There is no incentive to make the wholesale modifications to the Chowienczyk gas sensor as suggested by the Examiner such that remaining life may be calculated in a different manner. It is submitted that any assertion to the contrary would be hindsight reconstruction and/or would be an unsupported belief that it would be "obvious to try" such a combination. *In re Fine*, 837 F.2d 1071, 5 USPQ 1596 (Fed. Cir. 1988); *In re Geiger* F.2d 686, 688, 2 USPQ 1276, 1278 (Fed. Cir. 1987).

Applicants respectfully submit that the combination of Chowienczyk and Nukui references do not form the basis for an obviousness rejection because one of ordinary

skill would not recognize that this combination of elements would lead to the claimed results.

In addition, Applicants submit that the cited references Chowienczyk and Nukui are non-analogous art and are not properly combinable. As stated in MPEP § 2141.01(a), "[i]n order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). It is clear that Nukui is not pertinent to the problem of improving gas sensors because it is directed to a battery-residue sensing device. One of ordinary skill in the art would seek guidance on the problems appertaining to improvement of gas sensors by reviewing the literature related to battery-residue sensing devices.

Accordingly, for at least the reasons set forth herein, the combined teachings of Chowienczyk and Nukui do not establish a *prima facie* case for obviousness. Accordingly, withdrawal of the rejection under 35 U.S. C. § 103(a) is respectfully requested.

B) Rejection of Claims 4, 14, 15, 24, and 29 under 35 U.S.C. § 103(a)

Claims 4, 14, 15, 24, and 29 stand rejected under 35 U.S.C. § 103(a) for assertedly being obvious over Chowienczyk and Nukui and further in view of U.S. Patent No. 6,565,509 to Say *et al.* (hereinafter, "Say"). Applicants respectfully traverse the rejections, as set forth herein.

For at least the reasons set forth in *Section A*, above, it is improper to combine the Chowienczyk and Nukui references to establish a *prima facie* case of obviousness of the gas sensor as recited in independent claims 1, 12, 21, and 28, and the claims that depend therefrom. Say, when combined with Chowienczyk and Nukui provide no teaching that would render dependent claims 4, 14, 15, 24, and 29 obvious.

Indeed, the Examiner only cites Say for the teaching that data from the sensor and control unit can be encrypted in order to eliminate "crosstalk" and to identify signals from the appropriate control unit. Say, like Chowienczyk, fails to teach or suggest a gas sensor that is configured such that the cumulative current output of the sensor is subtracted from a theoretical total to determine the remaining useful life of the sensor.

Thus, it is respectfully submitted that claims 4, 14, 15, 24, and 29 are not obvious in view of the combination of teachings of Chowienczyk and Nukui in view of Say. Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 4, 14, 15, 24, and 29 under 35 U.S.C. § 103(a).

C) Rejection of Claims 6, 16, and 26 under 35 U.S.C. § 103(a)

Claims 6, 16, and 26 stand rejected under 35 U.S.C. § 103(a) for assertedly being obvious over Chowienczyk and Nukui and in view of U.S. Patent 6,287,519 to Nordman *et al.* (hereinafter, Nordman). Applicants respectfully traverse the rejections as set forth herein.

For at least the reasons set forth in *Section A*, above, it is improper to combine the Chowienczyk and Nukui references to establish a *prima facie* case of obviousness

of the gas sensor as recited in independent claims 1, 12, 21, and the claims that depend therefrom. Nordman when combined with Chowienczyk and Nukui provide no teaching that would render dependent claims 6, 16, and 26 obvious.

Indeed, the Examiner only cites Nordman for the teaching of the use of a microcontroller within the gas sensor housing in order to make the sensor handheld and portable for ease of use. Nordman, like Chowienczyk, fails to teach or suggest gas sensors that are configured such that the cumulative current output of the sensor is subtracted from a theoretical total to determine the remaining life of the sensor.

Thus, it is respectfully submitted that claims 6, 16, and 26 are not obvious in view of the combination of teachings of Chowienczyk and Nukui in view of Nordman. Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 6, 16, and 26 under 35 U.S.C. § 103(a).

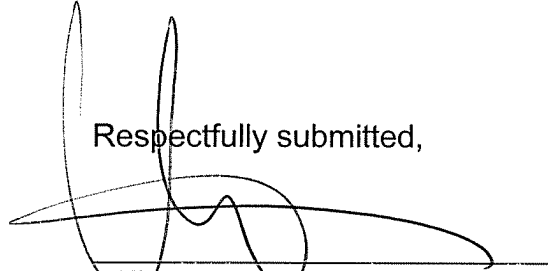
Conclusion

Applicants respectfully submit that claims 1, 4-12, 14-22, and 24-31 of the subject application are non-obvious over the prior art of record and are in proper form for allowance. In view of the foregoing, Applicants respectfully submit that the subject application is in condition for allowance. Accordingly, reconsideration of the rejections and allowance of the claims at an early date are earnestly solicited.

If the undersigned can be of assistance to the Examiner in addressing any additional issues to advance the application to a condition of allowance, please contact the undersigned at the number set forth below.

Sept 26, 2007
Date

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'William E. Kuss', written over a horizontal line.

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